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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,248	06/25/2004	Michel Berdoyes	BDL-461XX	8913

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EXAMINER

RODRIGUEZ, WILLIAM H

ART UNIT PAPER NUMBER

3746

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/500,248

Applicant(s)

BERDOYES ET AL.

Examiner

William H. Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/25/04 preliminary amendment.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/25/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “*the ring of the cardan mount being elastically deformed on assembly... (claim 13)* ” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 13 recites the limitation "said ring" in line 14. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

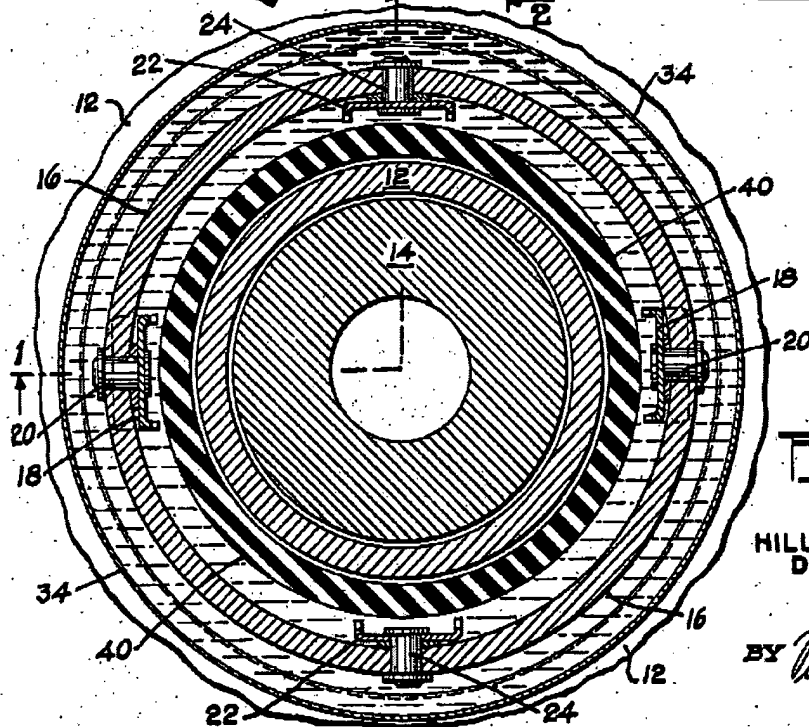
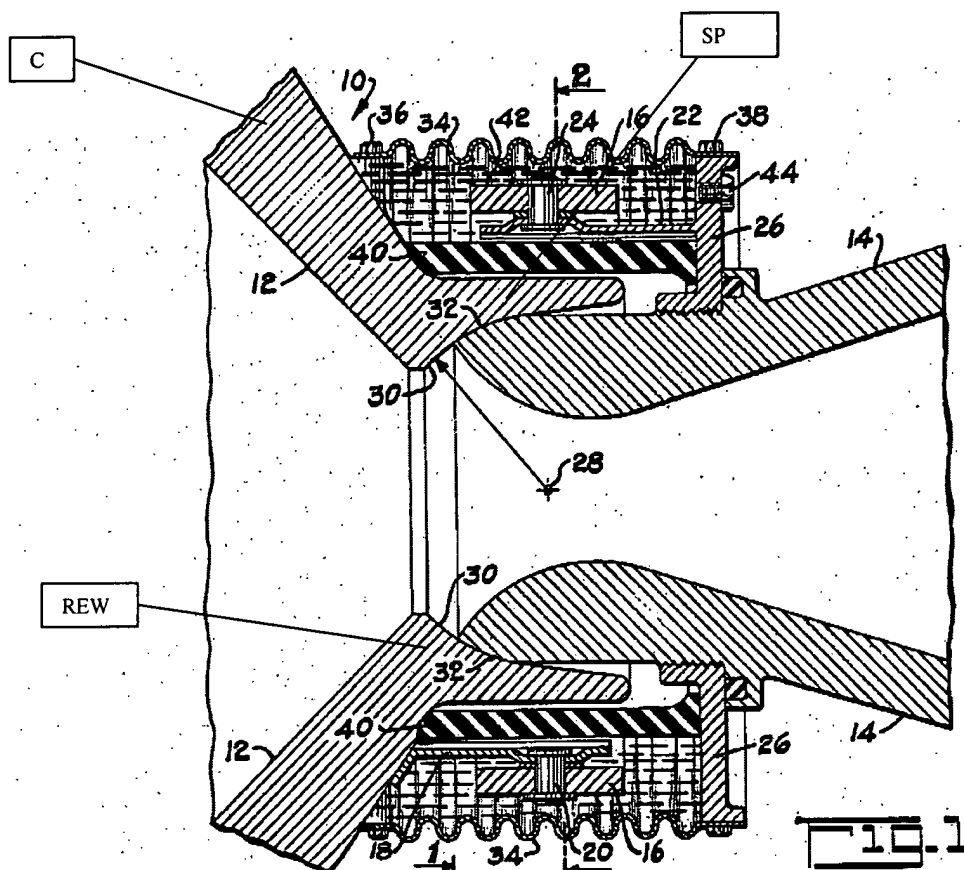
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 5, 6, 12, 13 are rejected under 35 U.S.C. 102(b) as being anticipated by **Barrett et al. (U.S. 3,811,713)**.

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INVEN
HILLARD E. BAR
DONALD B. CI
BERNARD

BY *Victor D. B.*
ATTOR

With respect to claim 1, **Barrett** teaches a steerable nozzle for rocket engine comprising: casing (C) surrounding a combustion chamber and having rear end wall (REW); a nozzle comprising moving diverging portion (14) and a static portion (SP) secured to the rear end wall; a jointed link device connecting the moving diverging portion of the nozzle to the static portion, the moving diverging portion and the static portion being in mutual contact via respective spherical surfaces (30, 32); and an actuator device (not shown but mentioned, column 1 line 68-column 2 line 2) acting on the moving diverging portion of the nozzle to enable the direction of the thrust vector of the engine to be varied by modifying the orientation of the nozzle with the spherical surfaces sliding one on the other, resilient return means (34) are interposed between the moving diverging portion (14) of the nozzle and the static portion (SP), said resilient return means acting on the moving diverging portion to urge it towards the static portion so as to keep the spherical surfaces (30, 32) in mutual contact for any desired orientation of the nozzle. See particularly **Figures 1, 2** of Barrett.

Note: the jointed link device or cardan mount can be comprised of the following elements: 22, 26, 36, 18, 20, 24, 16, 34, 40, 38, 44.

With respect to claim 2, **Barrett** teaches that the link device is a cardan mount comprising a ring (16), two first link arms (22) connecting the moving diverging portion (14) of the nozzle to the ring via two first hinges (24), and two second link arms (18) connecting the ring to the rear end wall of the casing via two second hinges (20), the resilient return means (34) are integrated in link arms. See particularly **Figures 1, 2** of Barrett.

With respect to claim 3, **Barrett** teaches that resilient return means 34 are integrated in the first link arms (22). See particularly **Figures 1, 2** of Barrett.

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With respect to claim 5, **Barrett** teaches that the resilient return means (34 or 16 or 40) are constituted at least in part by an elastically deformable part of the link device which is elastically deformed on assembly. See particularly **Figures 1, 2** of Barrett.

With respect to claim 6, **Barrett** teaches that the resilient return means are constituted at least in part by the ring (16) of the cardan mount which is elastically deformable and is elastically deformed on assembly. See particularly **Figures 1, 2** of Barrett.

With respect to claim 12, **Barrett** teaches a steerable nozzle for a rocket engine comprising: a casing C surrounding a combustion chamber and having a rear end wall REW; a nozzle comprising a moving diverging portion 14 and a static portion SP secured to the rear end wall; a cardan mount connecting the moving diverging portion of the nozzle to the static portion, the moving diverging portion and the static portion being in mutual contact via respective spherical surfaces 30, 32, the cardan mount comprising a ring 16, two first link arms 22 connecting the moving diverging portion of the nozzle to the ring 16 via two first hinges 24, and two second link arms 18 connecting the ring 16 to the rear end wall of the casing via two second hinges 20; an actuator device (not shown but mentioned, column 1 line 68- column 2 line 2) acting on the moving diverging portion 14 of the nozzle to enable the direction of the thrust vector of the engine to be varied by modifying the orientation of the nozzle with the spherical surfaces sliding one on the other; and resilient return means 34 or 40 integrated in link arms of the cardan mount and acting on the moving diverging portion to urge it towards the static portion so as to keep the spherical surfaces in mutual contact for any desired orientation of the nozzle. See particularly **Figures 1, 2** of Barrett.

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With respect to claim 13, **Barrett** teaches a steerable nozzle for a rocket engine comprising: a casing C surrounding a combustion chamber and having a rear end wall REW; a nozzle comprising a moving diverging portion 14 and a static portion SP secured to the rear end wall; a cardan mount connecting the moving diverging portion of the nozzle to the static portion, the moving diverging portion and the static portion being in mutual contact via respective spherical surfaces 30, 32; and an actuator device (not shown but mentioned, column 1 line 68-column 2 line 2) acting on the moving diverging portion the nozzle to enable the direction of the thrust vector of the engine to be varied by modifying the orientation of the nozzle with the spherical surfaces sliding one on the other; the ring 16 or 40 of the cardan mount being elastically deformed on assembly to act on the moving diverging portion to urge it towards the static portion so as to keep the spherical surfaces in mutual contact for any desired orientation of the nozzle. See particularly **Figures 1, 2** of Barrett.

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7. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by **Rossmanith** (DE. 3119183 A1).

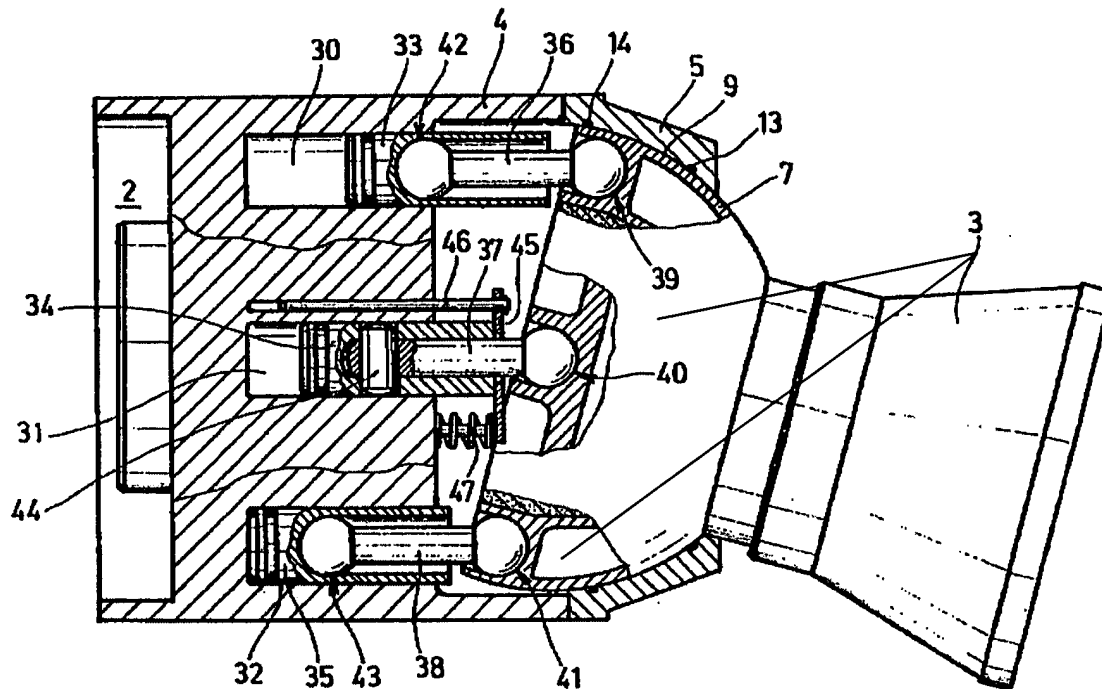


FIG. 2

With respect to claim 1, **Rossmanith** teaches a steerable nozzle for rocket engine comprising: casing (4) surrounding a combustion chamber and having rear end wall; a nozzle comprising moving diverging portion (3) and a static portion (5) secured to the rear end wall; a jointed link device (6, see Figure 1) connecting the moving diverging portion of the nozzle to the static portion, the moving diverging portion and the static portion being in mutual contact via respective spherical surfaces (7, 9); and an actuator device (36-38) acting on the moving diverging portion of the nozzle to enable the direction of the thrust vector of the engine to be varied by modifying the orientation of the nozzle with the spherical surfaces sliding one on the other, resilient return means (47) are interposed between the moving diverging portion (3) of the

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nozzle and the static portion (5), said resilient return means acting on the moving diverging portion to urge it towards the static portion so as to keep the spherical surfaces (30, 32) in mutual contact for any desired orientation of the nozzle. See particularly **Figures 1, 2** of Rossmanith.

With respect to claim 4, **Rossmannith** teaches that the resilient return means 47 comprise pre-stressed springs. See particularly **Figure 2** of Rossmanith

Note: U.S. references **3,570,768** and **3,140,584** (listed on the PTO-892 form) can be used to reject at least claim 1 under 35 U.S.C 102 (b). See Figures 1 and 2 of the mentioned references.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Barrett et al.** (U.S. 3,811,713).

With respect to claims 7-10, **Barrett** does not teach that anti-friction means are provided between the spherical surfaces 30, 32 in mutual contact. However, providing some kind of anti-friction means (i.e. lubricant, grease, coatings) between the rubbing spherical surfaces 30, 32 of **Barrett** would have been an obvious (if not inherent) design consideration in order to extend the life of the components by preventing wear and tear due to friction. Further, it was well known

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and within the level of one of ordinary skilled in the art to provide some kind of antifriction means when two components are rubbing with each other. Typical antifriction means well known and used in the art include lubricants, grease, and coatings. Basically, selecting a type of antifriction means for a particular application is a design choice within the level of one of ordinary skilled in the art. Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have selected a type of antifriction means (lubricants, grease, coatings, etc) in order to extend the life of the components by preventing damage caused by wear and tear due to friction.

With respect to claim 11, **Barrett** does not teach that the actuator device comprises a rotary actuator. However, selecting a type of actuator is a design choice within the level of one of ordinary skilled in the art. Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have selected a type of actuator that provides the best optimum performance of the moving diverging nozzle.

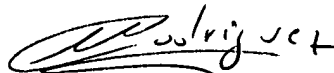
Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Rodriguez whose telephone number is 571-272-4831. The examiner can normally be reached on Monday-Friday 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "William H. Rodriguez", with a stylized flourish at the end.

William H. Rodriguez
Examiner
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